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"**The Water Fowl Family**".[1] — The fourth volume in the *American Sportsman's Library* is an attractive book, which will doubtless prove of much value to those sportsmen who desire to extend their knowledge of the life habits of the game birds. It deals with the North American ducks, geese, swans, rails, and shore-birds. There are general descriptions of the families in each group, and accounts of each species, including their distribution, nesting and feeding habits. These have been compiled from standard authorities. There are also accounts from original observation of the behavior of each well-known species as it concerns the sportsman, and descriptions of the various methods employed in hunting it. An encouraging interest in bird protection is shown throughout the book; the "game hog" is condemned, and a close season in spring strongly advocated. It is a pity that a little of the cheap sporting-story element was included. The chapter on goose-shooting by the man who "hoped to preside at the obsequies of a goose" might well have been omitted. There are a number of excellent full page illustrations, three by Bull, and the rest by Fuertes.

R. H.

Ancestral Canidæ.[2] — Mr. J. B. Hatcher has published a paper of unusual interest on the Oligocene Canidæ lately discovered in Nebraska, and now preserved in the Carnegie Museum.[3] A full account is given of an almost complete skeleton of *Daphænus felinus*, Scott, and two new genera, Proamphicyon and Protemnocyon, are described. It is held that Daphænus has no known descendant; that Proamphicyon is ancestral to Amphicyon; and that Protemnocyon is ancestral to Temnocyon. This last animal is of particular interest, as it seems to be undoubtedly ancestral to Canis; that is, to the common dog. The discovery of Protemnocyon carries the known ancestry of the dog one stage further back; and, in fact, it was a very dog-like creature. The sagittal crest is quite as in the dogs; the two temporal crests of the foxes give their skulls a decidedly different appearance. The postorbital processes of the frontals are essentially as in the dogs, though short. The third molar is wanting, or perhaps occasionally present of very small size, in the upper jaw; present but very small in the lower. In the dog the third molar is usually absent in the upper, present in the lower jaw, but quite numerous cases have been found in which it was present in the upper jaw. Wortman and Matthew have held that the modern representative of Temnocyon is Cyon of India, which is little more than a subgenus of Canis; but as Mr. Hatcher remarks, this is problematical. Cyon is principally distinguished by the absence of the last lower molar, which would indicate that it is more specialized than Canis proper; the same character occurs as an aberration not rarely in the domestic dog and several wild species of Canis. It is to be remarked that the genus (Icticyon) which shows the greatest reduction of the molars (to one above and two below) is a native of South America. The top of the skull in Protemnocyon is flat in lateral view; in the coyote it is more elevated, while in the domestic dog it is strongly convex; these changes no doubt accompanying a progressive development of the brain, though partly the result also of enlarged frontal air-sinuses. In Temnocyon the absence of the third molar in the lower jaw suggests Cyon rather than Canis proper, but it does not seem impossible that this molar might be lost and recovered again (contrary to the doctrine of some), considering the comparative frequency of an extra (fourth) molar in the lower jaw of the common dog. However, while Temnocyon stands nearer to Canis than does Protemnocyon, both in time and by the auditory bullæ, it may still be a little out of the direct line.

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[1] Sanford, L. C., Bishop, L. B., and Van Dyke, T. S. *The Water Fowl Family*. New York, Macmillan, 1903. 8vo, ix–598 pp., 20 pls.

[2] See also an important article by Dr. W. D. Matthew (*Science*, June 5, 1903, p. 912) published since this notice was written.

[3] Oligocene Canidæ. *Mem. Carnegie Mus.* Vol. 1, pp. 65–108. Pls. XIV–XX.

T. D. A. C.

Parker on the Hearing of Fishes.[1] — Professor G. H. Parker gives an account of his studies of the sense of hearing in fishes. Taking the common Killifish, *Fundulus heteroclitus* as the subject of experiment, he shows that this fish does actually hear sounds which may be made by means of tuning forks, and that it becomes deaf on cutting the auditory nerve. It is possible that fishes of other species may be actually insensible to sounds as experiments of others have seemed to show, and in all fishes the ear may be in part an organ of equilibration.

It is of course not likely that any fish has the power to make fine discriminations in sounds.

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[1] Parker, G. H. Hearing and Allied Senses in Fishes. *Bull. U. S. Fish Com. for 1902*, pp. 45–64, pl. 9.